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CLAIMS

What is claimed is:

1. An isolated polypeptide having HPR1 polypeptide activity comprising an amino acid sequence selected from the group consisting of:
 - (a) the amino acid sequence of SEQ ID NO:4;
 - 10 (b) an amino acid sequence selected from the group consisting of: amino acids 652 through 745 of SEQ ID NO:4, a fragment of the sequence of amino acids 652 through 745 of SEQ ID NO:4 comprising at least 20 contiguous amino acids; a fragment of the sequence of amino acids 652 through 745 of SEQ ID NO:4 comprising at least 30 contiguous amino acids; a fragment of the sequence of amino acids 652 through 745 of SEQ ID NO:4 that is at least 25% of the length of the sequence of amino acids 652 through 745 of SEQ ID NO:4; a fragment of the sequence of amino acids 652 through 745 of SEQ ID NO:4 that is at least 50% of the length of the sequence of amino acids 652 through 745 of SEQ ID NO:4; and a fragment of the sequence of amino acids 652 through 745 of SEQ ID NO:4 comprising at least eight contiguous amino acids and comprising at least one tyrosine residue;
 - 20 (c) an amino acid sequence comprising at least 8 amino acids and sharing amino acid identity with the amino acid sequences of (b), wherein the percent amino acid identity is selected from the group consisting of: at least 70%, at least 75%, at least 80%, at least 85%, at least 90%, at least 95%, at least 97.5%, at least 99%, and at least 99.5%;
 - 25 (d) an amino acid sequence comprising both an amino acid sequence of (b) or (c), and an amino acid sequence selected from the group consisting of: amino acids 1 through 55 of SEQ ID NO:1; amino acids 56 through 77 of SEQ ID NO:1; amino acids 5 through 40 of SEQ ID NO:2; amino acids 1 through 32 of SEQ ID NO:4; amino acids 1 through 241 of SEQ ID NO:4; amino acids 1 through 525 of SEQ ID NO:4; amino acids 20 through 32 of SEQ ID NO:4; amino acids 33 through 134 of SEQ ID NO:4; amino acids Xaa1 through Xaa2 of SEQ ID NO:4, wherein Xaa1 is selected from the group consisting of amino acids 33 through 43 of SEQ ID NO:4 and Xaa2 is selected from the group consisting of amino acids 228 through 241 of SEQ ID NO:4; amino acids 33 through 238 of SEQ ID NO:4; amino acids 33 through 241 of SEQ ID NO:4; amino acids 33 through 525 of SEQ ID NO:4; amino acids 33 through 745 of SEQ ID NO:4; amino acids 44 through 94 of SEQ ID NO:4; amino acids 139 through 241 of SEQ ID NO:4; amino acids 242 through 326 of SEQ ID NO:4; amino acids 242 through 514 of SEQ ID NO:4; amino acids 337 through 419 of SEQ ID NO:4; amino acids 433 through 514 of SEQ ID NO:4; amino acids 526 through 556 of SEQ ID NO:4; amino acids 533 through 552 of SEQ ID NO:4; amino acids 553 through 745 of SEQ ID NO:4; amino acids 557 through 745 of SEQ ID NO:4; amino acids 563 through 573 of SEQ ID NO:4; amino acids 563 through 641 of SEQ ID NO:4; amino acids 567 through 581 of SEQ ID NO:4; amino acids 588 through 639 of SEQ ID NO:4; amino acids 631 through 641 of SEQ ID NO:4; SEQ ID NO:10; and SEQ ID NO:11;
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- 5 (e) an amino acid sequence comprising both an amino acid sequence of (b) or (c), and a fragment of SEQ ID NO:4 comprising cytokine receptor domain amino acid sequences;
- (f) an allelic variant of any of (a)-(e); and
- (g) an amino acid sequence of (a)-(f), wherein a polypeptide comprising said amino acid sequence of (a)-(f) binds to an antibody that also binds to a polypeptide comprising an amino acid sequence of any of (b)-(c).
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2. An isolated polypeptide having HPR1 polypeptide activity comprising an amino acid sequence selected from the group consisting of:
- (a) the amino acid sequence of SEQ ID NO:12;
- 15 (b) an amino acid sequence selected from the group consisting of: amino acids 633 through 726 of SEQ ID NO:12, a fragment of the sequence of amino acids 633 through 726 of SEQ ID NO:12 comprising at least 20 contiguous amino acids; a fragment of the sequence of amino acids 633 through 726 of SEQ ID NO:12 comprising at least 30 contiguous amino acids; a fragment of the sequence of amino acids 633 through 726 of SEQ ID NO:12 that is at least 25% of the length of the sequence of amino acids 633 through 726 of SEQ ID NO:12; a fragment of the sequence of amino acids 633 through 726 of SEQ ID NO:12 that is at least 50% of the length of the sequence of amino acids 633 through 726 of SEQ ID NO:12; and a fragment of the sequence of amino acids 633 through 726 of SEQ ID NO:12 comprising at least eight contiguous amino acids and comprising at least one tyrosine residue;
- 20 (c) an amino acid sequence comprising at least 8 amino acids and sharing amino acid identity with the amino acid sequences of (b), wherein the percent amino acid identity is selected from the group consisting of: at least 70%, at least 75%, at least 80%, at least 85%, at least 90%, at least 95%, at least 97.5%, at least 99%, and at least 99.5%;
- 25 (d) an amino acid sequence comprising both an amino acid sequence of (b) or (c), and an amino acid sequence selected from the group consisting of: amino acids 1 through 28 of SEQ ID NO:12; amino acids 1 through 224 of SEQ ID NO:12; amino acids 1 through 509 of SEQ ID NO:12; amino acids 13 through 28 of SEQ ID NO:12; amino acids 29 through 124 of SEQ ID NO:12; amino acids Xaa1 through Xaa2 of SEQ ID NO:12, wherein Xaa1 is selected from the group consisting of amino acids 29 through 39 of SEQ ID NO:12 and Xaa2 is selected from the group consisting of amino acids 211 through 224 of SEQ ID NO:12; amino acids 29 through 128 of SEQ ID NO:12; amino acids 29 through 224 of SEQ ID NO:12; amino acids 29 through 509 of SEQ ID NO:12; amino acids 29 through 726 of SEQ ID NO:12; amino acids 129 through 224 of SEQ ID NO:12; amino acids 225 through 309 of SEQ ID NO:12; amino acids 225 through 499 of SEQ ID NO:12;
- 30 (e) an amino acid sequence comprising both an amino acid sequence of (b) or (c), and a fragment of SEQ ID NO:12 comprising cytokine receptor domain amino acid sequences;
- 35 (f) an allelic variant of any of (a)-(e); and
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- 5 (g) an amino acid sequence of (a)-(f), wherein a polypeptide comprising said amino acid sequence of (a)-(f) binds to an antibody that also binds to a polypeptide comprising an amino acid sequence of any of (b)-(c).

3. An isolated polypeptide having HPR2 polypeptide activity comprising an amino acid
10 sequence selected from the group consisting of:

- (a) SEQ ID NO:23;
(b) SEQ ID NO:25;
(c) an amino acid sequence selected from the group consisting of: an amino acid sequence comprising at least 20 contiguous amino acids of SEQ ID NO:23 and comprising the
15 contiguous amino acids 318 and 319 of SEQ ID NO:23; and amino acids 349 through 356 of SEQ ID NO:25;

- (d) an amino acid sequence comprising at least 8 amino acids and sharing amino acid identity with the amino acid sequences of (c), wherein the percent amino acid identity is selected from the group consisting of: at least 70%, at least 75%, at least 80%, at least 85%, at least 90%,
20 at least 95%, at least 97.5%, at least 99%, and at least 99.5%;

- (e) an amino acid sequence comprising both an amino acid sequence of (c) or (d), and an amino acid sequence selected from the group consisting of: amino acids 1 through 177 of SEQ ID NO:16; amino acids 216 through 245 of SEQ ID NO:16; SEQ ID NO:17; and SEQ ID NO:18;

- (f) an amino acid sequence comprising both an amino acid sequence of (c) or (d), and an
25 amino acid sequences of any of (a)-(b) comprising cytokine receptor domain amino acid sequences;

- (g) an allelic variant of any of (a)-(f); and
(h) an amino acid sequence of (a)-(g), wherein a polypeptide comprising said amino acid sequence of (a)-(g) binds to an antibody that also binds to a polypeptide comprising an amino acid
30 sequence of any of (c)-(d).

4. An isolated polypeptide having HPR2 polypeptide activity comprising an amino acid sequence selected from the group consisting of:

- (a) SEQ ID NO:27;
35 (b) SEQ ID NO:27 from which amino acids 297 through 316 or amino acids 317 through 336 have been deleted;
(c) an amino acid sequence comprising 20 or more contiguous amino acids of (a) or (b); and
(d) an amino acid sequence comprising 30 or more contiguous amino and sharing at least
40 90% amino acid identity with the amino acid sequences of (a)-(b).

- 5 5. An isolated polypeptide having HPR1 polypeptide activity comprising an amino acid sequence selected from the group consisting of:
- (a) the amino acid sequence of SEQ ID NO:4;
- 10 (b) an amino acid sequence selected from the group consisting of: amino acids 652 through 745 of SEQ ID NO:4; a fragment of the sequence of amino acids 652 through 745 of SEQ ID NO:4 comprising at least 20 contiguous amino acids; a fragment of the sequence of amino acids 652 through 745 of SEQ ID NO:4 comprising at least 30 contiguous amino acids; a fragment of the sequence of amino acids 652 through 745 of SEQ ID NO:4 that is at least 25% of the length of the sequence of amino acids 652 through 745 of SEQ ID NO:4; a fragment of the sequence of amino acids 652 through 745 of SEQ ID NO:4 that is at least 50% of the length of the sequence of amino acids 652 through 745 of SEQ ID NO:4; and a fragment of the sequence of amino acids 652 through 745 of SEQ ID NO:4 comprising at least eight contiguous amino acids and comprising at least one tyrosine residue;
- 15 (c) an amino acid sequence comprising at least 8 amino acids and sharing amino acid identity with the amino acid sequences of (b), wherein the percent amino acid identity is selected from the group consisting of: at least 80%, at least 85%, at least 90%, at least 95%, at least 97.5%, at least 99%, and at least 99.5%; and
- 20 (d) an amino acid sequence comprising both an amino acid sequence of (b) or (c), and an amino acid sequence selected from the group consisting of: amino acids 1 through 55 of SEQ ID NO:1; amino acids 56 through 77 of SEQ ID NO:1; amino acids 5 through 40 of SEQ ID NO:2; amino acids 1 through 32 of SEQ ID NO:4; amino acids 1 through 241 of SEQ ID NO:4; amino acids 1 through 525 of SEQ ID NO:4; amino acids 20 through 32 of SEQ ID NO:4; amino acids 33 through 134 of SEQ ID NO:4; amino acids Xaa1 through Xaa2 of SEQ ID NO:4, wherein Xaa1 is selected from the group consisting of amino acids 33 through 43 of SEQ ID NO:4 and Xaa2 is selected from the group consisting of amino acids 228 through 241 of SEQ ID NO:4; amino acids 33 through 238 of SEQ ID NO:4; amino acids 33 through 241 of SEQ ID NO:4; amino acids 33 through 525 of SEQ ID NO:4; amino acids 33 through 745 of SEQ ID NO:4; amino acids 44 through 94 of SEQ ID NO:4; amino acids 139 through 241 of SEQ ID NO:4; amino acids 242 through 326 of SEQ ID NO:4; amino acids 242 through 514 of SEQ ID NO:4; amino acids 337 through 419 of SEQ ID NO:4; amino acids 433 through 514 of SEQ ID NO:4; amino acids 526 through 556 of SEQ ID NO:4; amino acids 533 through 552 of SEQ ID NO:4; amino acids 553 through 745 of SEQ ID NO:4; amino acids 557 through 745 of SEQ ID NO:4; amino acids 563 through 573 of SEQ ID NO:4; amino acids 563 through 641 of SEQ ID NO:4; amino acids 567 through 581 of SEQ ID NO:4; amino acids 588 through 639 of SEQ ID NO:4; amino acids 631 through 641 of SEQ ID NO:4; SEQ ID NO:10; and SEQ ID NO:11.
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6. An isolated polypeptide having HPR1 polypeptide activity comprising an amino acid sequence selected from the group consisting of:

- 5 (a) the amino acid sequence of SEQ ID NO:12;
- (b) an amino acid sequence selected from the group consisting of: amino acids 633
10 though 726 of SEQ ID NO:12, a fragment of the sequence of amino acids 633 though 726 of SEQ
ID NO:12 comprising at least 20 contiguous amino acids; a fragment of the sequence of amino
acids 633 though 726 of SEQ ID NO:12 comprising at least 30 contiguous amino acids; a fragment
of the sequence of amino acids 633 though 726 of SEQ ID NO:12 that is at least 25% of the length
of the sequence of amino acids 633 though 726 of SEQ ID NO:12; a fragment of the sequence of
amino acids 633 though 726 of SEQ ID NO:12 that is at least 50% of the length of the sequence of
amino acids 633 though 726 of SEQ ID NO:12; and a fragment of the sequence of amino acids 633
15 though 726 of SEQ ID NO:12 comprising at least eight contiguous amino acids and comprising at
least one tyrosine residue;
- (c) an amino acid sequence comprising at least 8 amino acids and sharing amino acid
identity with the amino acid sequences of (b), wherein the percent amino acid identity is selected
from the group consisting of: at least 80%, at least 85%, at least 90%, at least 95%, at least 97.5%,
at least 99%, and at least 99.5%; and
- 20 (d) an amino acid sequence comprising both an amino acid sequence of (b) or (c), and an
amino acid sequence selected from the group consisting of: amino acids 1 through 28 of SEQ ID
NO:12; amino acids 1 through 224 of SEQ ID NO:12; amino acids 1 through 509 of SEQ ID
NO:12; amino acids 13 through 28 of SEQ ID NO:12; amino acids 29 through 124 of SEQ ID
NO:12; amino acids Xaa1 through Xaa2 of SEQ ID NO:12, wherein Xaa1 is selected from the
25 group consisting of amino acids 29 through 39 of SEQ ID NO:12 and Xaa2 is selected from the
group consisting of amino acids 211 through 224 of SEQ ID NO:12; amino acids 29 through 128
of SEQ ID NO:12; amino acids 29 through 224 of SEQ ID NO:12; amino acids 29 through 509 of
SEQ ID NO:12; amino acids 29 through 726 of SEQ ID NO:12; amino acids 129 through 224 of
SEQ ID NO:12; amino acids 225 through 309 of SEQ ID NO:12; amino acids 225 through 499 of
30 SEQ ID NO:12.
7. An isolated polypeptide having HPR2 polypeptide activity comprising an amino acid
sequence selected from the group consisting of:
- (a) SEQ ID NO:23;
- 35 (b) SEQ ID NO:25;
- (c) an amino acid sequence selected from the group consisting of: an amino acid
sequence comprising at least 20 contiguous amino acids of SEQ ID NO:23 and comprising the
contiguous amino acids 318 and 319 of SEQ ID NO:23; and amino acids 349 through 356 of SEQ
ID NO:25;
- 40 (d) an amino acid sequence comprising at least 8 amino acids and sharing amino acid
identity with the amino acid sequences of (c), wherein the percent amino acid identity is selected

- 5 from the group consisting of: at least 80%, at least 85%, at least 90%, at least 95%, at least 97.5%,
at least 99%, and at least 99.5%; and
- (e) an amino acid sequence comprising both an amino acid sequence of (c) or (d), and an
amino acid sequence selected from the group consisting of: amino acids 1 through 177 of SEQ ID
NO:16; amino acids 216 through 245 of SEQ ID NO:16; SEQ ID NO:17; and SEQ ID NO:18.
- 10 8. An isolated polypeptide having HPR2 polypeptide activity comprising an amino acid
sequence selected from the group consisting of:
- (a) SEQ ID NO:27;
- (b) SEQ ID NO:27 from which amino acids 297 through 316 or amino acids 317 through
15 336 have been deleted; and
- (c) an amino acid sequence comprising 30 or more contiguous amino acids of (a) or (b).
9. A method for identifying compounds that alter HPR1 polypeptide activity comprising
- (a) contacting the polypeptide of claim 1 with a test compound; and
- 20 (b) determining whether the test compound alters the effect on intracellular signaling of
said polypeptide.
10. A method for identifying compounds that alter HPR1 polypeptide activity comprising
- (a) contacting the polypeptide of claim 2 with a test compound; and
- 25 (b) determining whether the test compound alters the effect on intracellular signaling of
said polypeptide.
11. A method for identifying compounds that alter HPR2 polypeptide activity comprising
- (a) contacting the polypeptide of claim 3 with a test compound; and
- 30 (b) determining whether the test compound alters the effect on intracellular signaling of
said polypeptide.
12. A method for identifying compounds that alter HPR2 polypeptide activity comprising
- (a) contacting the polypeptide of claim 4 with a test compound; and
- 35 (b) determining whether the test compound alters the effect on intracellular signaling of
said polypeptide.